Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Promoting Investment in the 3550-3700 MHz Band	)	GN Docket No. 17-258
	)	
	)	

COMMENTS OF THE CONTENT COMPANIES

CBS Corporation, Scripps Networks Interactive, Inc., The Walt Disney Company, Time Warner Inc., 21st Century Fox, Inc., Univision Communications Inc., and Viacom Inc. (collectively, the "Content Companies") file these comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding. In particular, the Content Companies urge the Commission to reject proposals to increase out-of-band emissions from the 3550-3700 MHz band ("3.5 GHz band") into the adjacent 3700-4200 MHz band ("C-band"), well above the maximum emissions levels unanimously adopted in 2015 and affirmed in 2016.[1]

The Content Companies rely on fixed satellite service ("FSS") downlink transmissions in the C-band to deliver compelling programming to more than 100 million American households. The record established in multiple dockets since 2012 establishes that out-of-band emissions ("OOBE") from the 3.5 GHz band risk creating harmful interference to reception of FSS downlinks in the C-band, unless appropriate protections are in place.

In 2015, the Commission adopted rules for the 3.5 GHz band that rely exclusively on OOBE limits as the purported means of protecting reception of downlink transmissions in the C-

[1] *In re Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, *Notice of Proposed Rulemaking and Order Terminating Petitions*, FCC 17-134, ¶ 54 (rel. Oct. 24, 2017) (hereinafter "NPRM"); *see also* 82 Fed. Reg. 56,193 (Nov. 28, 2017).

band. While the Content Companies continue to be concerned that those OOBE limits permit excessive noise into the lower portion of the C-band at 3700-3720 MHz, the Commission was right to deny requests—on two occasions—by wireless parties seeking even weaker OOBE limits.[2] Maintaining OOBE at limits no greater than currently allowed in the rules is essential if the Commission is to meet its goal of "properly balanc[ing] the need to protect operations in adjacent bands . . . with the need to create an environment that will promote robust deployment of broadband systems in the [3.5 GHz] band."[3] Just 15 months since last addressing the issue, however, the Commission again seeks comment on proposals for weaker OOBE limits that would allow yet more noise into the lower part of the C-band. The Content Companies urge the Commission to reject these proposals, which would disrupt C-band transmissions at 3700-3720 MHz—resulting in a *de facto* reallocation of that spectrum to 3.5 GHz licensees.

I. THE C-BAND PLAYS A CRITICAL ROLE IN DELIVERING PROGRAMMING TO THE AMERICAN PUBLIC.

The C-band plays a critical role in enabling the delivery of programming by the U.S. media and entertainment industry, including the Content Companies.[4] In particular, C-band spectrum is used to deliver programming to each of the thousands of head-ends of multichannel video programming distributors ("MVPDs"), each of the well over 1,000 broadcast television stations affiliated with national television networks, and also to over-the-top video distributors. Moreover, the on-site newsgathering and live event audio and video essential to producing

[2] Above 3720 MHz, the Commission set OOBE limits of -40 dBm/MHz, which the Content Companies agree represents an appropriate emissions limit.

[3] *In re Amendment of the Commission's Rules With Regard to Commercial Operations in the 3550-3650 MHz Band*, FCC 16-55, ¶ 91 (rel. May 2, 2016) (hereinafter "2016 Order").

[4] *See, e.g.*, Comments of the Content Companies, GN Docket No. 17-183 at 2–3 (filed Oct. 2, 2017); Reply Comments of CBS Corp., 21st Century Fox, Inc., Time Warner Inc., Viacom Inc., & the Walt Disney Co., GN Docket No. 12-354 at 1 & n.2 (filed Aug. 15, 2015) (hereinafter "August 2015 Comments"); Joint Content Comments, GN Docket No. 12-354 at 2–3 (filed Feb. 20, 2013).

breaking news, sports, and other programming also depends upon the C-band, using temporary fixed stations to deliver content from studios to remote production facilities.

Although the vast majority of American consumers have no reason to know what the C-band is, this spectrum is a vital part of the system for bringing compelling program to more than 100 million American households every day. The C-band forms the backbone of the infrastructure for delivering premium video content to American consumers, regardless of how they ultimately view programming. This system works today with near-100% reliability to ensure that content instantaneously reaches virtually every U.S. household without interruption. But if these C-band transmissions were to fail or otherwise be impeded due to harmful interference from other services, the viewing public would lose access to the most important news, the most popular entertainment, and the most exciting live sports programs—no matter what technology the consumer uses to access video.[5]

II. THE COMMISSION TWICE HAS UNANIMOUSLY FOUND THAT ALLOWING GREATER OUT-OF-BAND EMISSIONS BY 3.5 GHZ LICENSEES WOULD HARM USERS OF THE C-BAND.

Between 2012 and 2015, interested parties engaged in a lengthy debate before the Commission about the appropriate level of adjacent band protection with respect to the 3.5 GHz band. Several parties, including many of the Content Companies, provided the Commission with information about the significant risks to reception of C-band downlinks, including three Alion studies.[6] These analyses suggested that small cell devices operating directly adjacent to the C-band at 3700 MHz risked creating harmful interference to reception of C-band downlinks, absent

[5] *See, e.g.*, Opposition of the Satellite Industry Association, RM-11791, at i (Aug. 7, 2016) (referring to the use of C-band for "backbone distribution of programming content for the nation's video delivery providers").

[6] *See* August 2015 Comments at 1–2 (describing three Alion studies commissioned by certain of the Content Companies showing the steps necessary to protect the C-band from OOBE generated by 3.5 GHz licensees).

appropriate protections.[7] As noted by certain of the Content Companies and others at the time, separation distances based on the locations of incumbent installations would have been a reasonable means of protecting C-band users from interference.[8] Other options to ensure peaceful co-existence of 3.5 GHz and C-band operations included a guard band, a more restrictive spectral emissions mask, or reduced power levels so that OOBE limits above 3700 MHz would not exceed -40 dBm/MHz.

Despite evidence of the risk of harm to reception of C-band downlinks, the Commission in 2015 decided to rely solely on OOBE limits as the purported means of protecting C-band downlinks, and to allow out-of-band emissions in 3700-3720 MHz at levels of up to -13 dBm/MHz.[9] The Commission's adoption of these OOBE limits and rejection of any other forms of protections for reception of C-band downlinks afforded substantial leeway to prospective 3.5 GHz licensees at the expense of C-band downlinks operating in the 3700-3720 MHz portion of the band—although some wireless parties had sought even more liberal OOBE limits in the lead-up to the 2015 decision.[10]

Following the Commission's 2015 decision, some wireless parties filed reconsideration petitions seeking the right to exceed even these modest limits, objecting to the need to reduce power to comply with the rules when using 20 MHz channels.[11] In May 2016, the Commission

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[7] August 2015 Comments, Attachment A.

[8] *See* August 2015 Comments at 2–3; *see also, e.g.*, Comments of the Satellite Industry Association, GN Docket No. 12-354 (filed Feb. 2013) at i–ii, 13–17 ("Exclusion zones around earth station sites would be needed to prevent harmful interference from small cells, and ensuring effective enforcement of the exclusion zones would be critical.").

[9] *In re Amendment of the Commission's Rules With Regard to Commercial Operations in the 3550-3650 MHz Band*, FCC 15-47, ¶ 184 (rel. Apr. 21, 2015) (hereinafter "2015 Order"); *see also* 47 C.F.R. § 96.41.

[10] *See, e.g.*, 2015 Order at ¶ 49 (discussing commenters supporting higher OOBE limits).

[11] 2016 Order at ¶ 93.

unanimously rejected these proposals to allow greater OOBE into the C-band, stating that the OOBE limits adopted in 2015 "properly balance the need to protect operations in adjacent bands . . . with the need to create an environment that will promote robust deployment of broadband systems in the [3.5 GHz] band."[12] The Commission explained that 10 MHz channels provided flexible, scalable, and practically deployable bandwidth for high data rate technologies. It also found that 3.5 GHz licensees are permitted to aggregate channels or operate across wider bandwidths, and that "the technical rules required for effective coexistence between and among different users of the band do not change, regardless of . . . how much bandwidth is in use."[13] The Commission further stated in 2016 that the existing OOBE limits did not preclude use of bandwidths larger than 10 MHz:

> We also note that power reduction may not be necessary if [3.5 GHz] users utilize robust filters or other alternative methods to address our OOBE limits. While the flexibility to aggregate spectrum is a key element of the Commission's licensing regime, reducing OOBE limits solely to accommodate wider bandwidths would not further the principles of shared access that are at the heart of this proceeding.[14]

Finally, the Commission found that the wireless "petitioners do not provide convincing evidence or technical analysis to support their claims regarding power reduction nor do they address the potential effects such changes could have on adjacent channel operations."[15]

While the Content Companies remain concerned over the level of OOBE that existing rules allow 3.5 GHz licensees to produce into the lower part of the C-band at 3700-3720 MHz,

[12] 2016 Order at ¶ 91. Although Commissioner O'Rielly dissented in part with respect to the 2016 Order, his dissent did not concern the decision to uphold the OOBE limits adopted in 2015.

[13] 2016 Order at ¶ 91.

[14] 2016 Order at ¶ 93.

[15] 2016 Order at ¶ 94.

we supported the Commission's unanimous decision to reject requests to allow even greater OOBE. Now, having failed to persuade the Commission—on two occasions—to allow even greater OOBE into the C-band, certain wireless parties sought a *third* bite at the apple in a 2017 petition for rulemaking.[16] In making this request, these parties did not submit any new evidence attempting to rebut the Commission's very recent findings that relaxation of the OOBE limits would be contrary to sound spectrum management policies and a necessary balancing of interests between adjacent uses. These parties also argued that relaxed emissions were necessary to allow the wider bandwidths that are anticipated for 5G services, but this argument ignores the fact that the Commission in 2016 found that 3.5 GHz licensees using wider bandwidths can, in fact, meet the existing OOBE limits *and* that with use of appropriate filters 3.5 GHz licensees may be able to use wider bandwidths without needing to reduce power.[17]

As discussed below, the Commission for a third and final time should reject proposals to relax out-of-band emission limits into the lower portion of the C-band downlink spectrum at 3700-3720 MHz.

III. THE COMMISSION SHOULD REJECT PROPOSALS TO RELAX OUT-OF-BAND EMISSION LIMITS INTO THE C-BAND.

Under either proposal on which the Commission has sought comment, the result—assuming the use of a 20 MHz channel bandwidth or greater—would be higher emissions into 3700-3720 MHz, directly interfering with C-band downlinks in that portion of the C-band. As a result of this harmful interference, the relaxed OOBE limits could effectively preclude use of the 3700-3720 MHz portion of the C-band, resulting in a *de facto* reallocation of that spectrum and

[16] *See* Petition of T-Mobile USA, Inc. for Rulemaking to Maximize Deployment of 5G Technologies in the Citizens Broadband Radio Service, RM-11788 (filed June 19, 2017) (hereinafter "T-Mobile Petition").

[17] 2016 Order at ¶ 93.

disrupting the balance between adjacent 3.5 GHz and C-band operations that the Commission unanimously found to be appropriate just 15 months ago.

First, the Commission seeks comment on a proposal that for single or aggregated channels that are the channel bandwidth ("B") MHz wide (up to 40 MHz), a -13 dBm/MHz requirement would apply from 0 to B MHz above and below channel edges and a -25 dBm/MHz requirement would apply at frequencies above B MHz, while retaining the current limits (-40 dBm/MHz) below 3530 MHz and above 3720 MHz.[18] The adoption of this proposal could lead to an additional 12 dB of *additional* interference power between 3710 and 3720 MHz. This additional noise would adversely impact the reception of C-band downlinks, as demonstrated by the most recent Alion study submitted to the FCC in August 2015 and, indeed, the Commission's own findings.[19] While the Commission previously criticized the Alion study as allegedly representing "overly conservative protection thresholds" in its call for mandatory geographic protection zones, even when assuming "real world deployment scenarios and operational conditions," the Commission found that the OOBE limits adopted in 2015 were necessary to protect adjacent downlink transmissions in the C-band.[20]

Second, the Commission seeks comment on a variation of the relaxed emissions proposal, with a more graduated reduction of emission limits and an additional attenuation step between the channel edge and a full channel bandwidth from the channel edge.[21] Specifically, the second

[18] NPRM at ¶ 54; *see also* Comments of Qualcomm Inc., GN Docket No. 12-354, RM-11788, RM-11789 at 3–4 (filed July 24, 2017).

[19] *See* August 2015 Comments, Attachment A.

[20] 2016 Order at ¶ 91.

[21] NPRM at ¶ 54.

proposal would still retain the current emission limits (-40 dBm/MHz) below 3530 MHz and above 3720 MHz but allow:

- -13 dBm/MHZ from 0 to 50% of B MHz from the assigned channel edge;
- -20 dBm/MHz from 50% of B to B MHz from the assigned channel edge; and
- -25 dBm/MHz beyond B from the assigned channel edge down to 3530 MHz and up to 3720 MHz.

While not quite as harmful to the C-band as the first proposal, this second proposal would lead to 5 dB of *additional* interference power between 3710–3720 MHz. This too would cause an unacceptable level of interference in the C-band, for all the reasons that the Commission found in 2016 that any relaxation of the OOBE limits would be inappropriate.

In seeking comment on whether to allow these additional emissions into 3700–3720 MHz, the NPRM does not provide any technical analysis to suggest that these additional emissions would be tolerable for C-band downlinks. Instead, the NPRM asks for comment on an Ofcom study that stands for the alleged proposition that actual OOBE may be lower than "worst case values."[22] That study, however, does not justify relaxed OOBE limits in the context of the C-band.

First, as the Commission made clear in refusing calls by the Content Companies and others to reduce OOBE into the C-band, the existing rules are not based on "worst case values" but rather on "real world deployment scenarios and operational conditions."[23] Second, Ofcom's study attempts to quantify the margin by which a device can meet the 3rd Generation Partnership Project ("3GPP") mask, but the results will be different depending on the particular masks and

[22] NPRM at ¶ 57 & n.136.

[23] 2016 Order at ¶ 299.

device types used. As such, the Ofcom results do not necessarily translate to real-world proposed small-cell operation in the 3.5 GHz band—some will operate closer to the margin and some will be farther, and others may exceed or violate the mask given inherent variability in device manufacturing. Moreover, as the NPRM acknowledges, Ofcom shows "increased emission leakage that accompanies increasing fundamental power," which is "due to the non-linear behavior of the power amplifier when it is driven into saturation."[24]

To be clear, the Content Companies do not object to increased out-of-channel emissions *within* the 3.5 GHz band. For example, if the Commission were to decide to allow a licensee operating a 40 MHz channel at 3600 MHz to produce additional emissions solely below 3700 MHz, there is no concern on the part of users of the C-band. Our concern is instead with out-of-band emissions at 3700 MHz and the harmful interference they would cause to reception of C-band downlinks in the lower portion of the 3700-4200 MHz band.

[24] NPRM at ¶ 57.

IV. CONCLUSION

The Content Companies urge the Commission to reject proposals to allow even greater OOBE into the C-band than existing rules adopted in 2015 and re-affirmed in 2016 allow. Given the lack of other protections, the existing OOBE limits already allow significant noise into the lower part of the C-band at 3700-3720 MHz. To relax these limits even further, as certain parties are attempting to do for the third time in less than three years, would effectively reallocate that part of the C-band by doing serious harm to the reliability of the C-band that serves as a critical means for making compelling programming content available to American households every day.

Respectfully submitted,

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